The third lung-bearing segment is supplied by the ganglion which lies in that segment. The fourth lung-bearing segment has no ganglion lying in it, and appears to depend entirely for its nerve-supply on the median nerve given off by the ganglion which, as in Androctonus, is placed in the next following segment.

These relations can only be understood by the aid of drawings. The woodcut shows diagrammatically in three figures, fig. 2 the disposition in *Androctonus funestus* (agreeing essentially with Newport's description), fig. 3 the disposition in *Scorpio cyaneus* of Ceylon, fig. 4 the disposition described by Dufour. This last diagram has been constructed from Dufour's drawing. It is without doubt erroneous in important particulars relative to the large ganglion of the prosoma, and is very probably erroneous in regard to other particulars.

It is worthy of attention as tending to associate the European scorpions of the sub-genus Euscorpius with those of the type of *Buthus afer*, to which *Sc. cyaneus* of Ceylon belongs, that in *Scorpio Italicus* and *Scorpio Carpathicus*, I have found the same disposition of the ganglia and of the primary branches of the ventral nerve-cord as that drawn in fig. 3. The only difference observed was that the ganglia in these European species are all a *little* further forward, so as to lie close to the anterior limit of the segments in which they occur.

We thus find that an important anatomical difference obtains between the Scorpions with triangular sternum (Androctoni) and the Scorpions with pentagonal sternum (Euscorpii, Buthi, &c.). Whether the Scorpions with band-like sternum (Telegoni) differ from or agree with either of these types in respect of their nervous system, has yet to be discovered.

VII. "On the Specific Heat and Heat of Transformation of the Iodide of Silver, AgI, and of the Alloys $Cu_2I_2.AgI$, $Cu_2I_2.2AgI$, $Cu_2I_2.3AgI$, $Cu_2I_2.4AgI$, $Cu_2I_2.12AgI$, $PbI_2.AgI$." By Professor M. Bellati and Dr. R. Romanese, Professors in the University of Padua. Communicated by Professor A. W. Williamson, For. Sec. R.S. Received June 7, 1882.

(Abstract.)

The authors' calorimetric investigation refers to substances which have been already studied by Mr. G. F. Rodwell ("Proc. Roy. Soc." vol. 32) as to their expansion and contraction by heat.

After having detailed the method of experimenting and tabulated the results of determinations for each substance, the authors recapitulate the results in the following table:—

Composition of the substance.	Percentage of AgI.	θ_1.	θ_2.	c.	c_1.	λ.
		C.	C.			
AgI	100·0	142°	156°·5	0·054389 + 0·0000372(T + t)	0·0577	6·25
Cu_2I_2.12AgI	88·1	95	228	0·05882 (from 16° to 89°)....	0·0580	8·31
Cu_2I_2.4AgI	71·2	180	282	0·056526 + 0·0000410(T + t)	0·0702	7·95
Cu_2I_2.3AgI	65·0	194	280	0·059624 + 0·0000280(T + t)	0·0726	7·74
Cu_2I_2.2AgI	55·3	221	298	0·061035 + 0·0000295(T + t)	..	7·88
Cu_2I_2.AgI..	38·2	256	324	0·063099 + 0·0000260(T + t)	..	8·67
				——		
PbI_2.AgI ..	33·8	118	144	0·047458 + 0·0000026(T + t)	0·0567	2·556

In this table θ_1 and θ_2 are the temperatures at which the structure change commences and finishes, according to Mr. Rodwell's results, c denotes the mean specific heat of the substance between t and T for temperatures below θ_1; c_1 is the specific heat for temperatures beyond θ_2; and λ is the heat absorbed by the unit weight of the substance in consequence of modification of structure. The relative accuracy of certain results and some probable conclusions are finally discussed.

VIII. "(I.) On a Tangential Property of Regular Hypocycloids and Epicycloids. (II.) On Theorems relating to the Regular Polyhedra which are analogous to those of Dr. Matthew Stewart on the Regular Polygons." By HENRY M. JEFFERY, F.R.S. Received June 3, 1882.

(Abstract.)

I. *On a Tangential Property of Regular Hypocycloids and Epicycloids.*

1. The following theorems will be established:—

(A.) The product of the perpendiculars drawn from all the cusps in each of these roulettes on any tangent is a function of the perpendicular only, which is drawn on the same tangent from the centre of the fixed circle, on which the roulette is generated. Consequently

(B.) The sums of the cotangents of the angles which any tangent to the roulette makes with the vectors drawn from the cusps to the point of contact is a function of the cotangent of the angle made by the vector drawn from the centre with the same tangent line, and of the perpendicular drawn from the centre.

2. These propositions are extended to spherical geometry, and their dual forms stated both for planimetry and spherics.